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Study on polypyrrole film by electrochemical polymerization in aqueous solution

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Abstract

Electroactive polypyrrole (PPy) film was prepared by electrochemical polymerization in aqueous solution. E.s.r. analysis of the film showed that the peak-to-peak linewidth is related with heat treatment, standing time and environmental atmosphere of the film. Oxygen and water molecules participate in electrochemical polymerization of pyrrole (Py) from aqueous solution and introduce $>C=O$ and $---OH$ groups into the structure of PPy film, as has been verified by XPS and FT-i.r. spectroscopy. The conductivity of the film measured by the four-probe method is less than that of the films prepared in organic solvent. The mechanism of electrochemical polymerization to form PPy in aqueous solution has been proposed.



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